THE ZOOLOGIST.

THIRD SERIES.

Vol. II.] NOVEMBER, 1878. [No. 23.

ON SOME PECULIARITIES IN THE ANATOMY OF SOFT-SHELLED TURTLES.

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Among the remarkable forms which, while preserving a general onformity to the typical structure, Nature has impressed upon the Vertebrates, none perhaps present greater anomalies than the order *Testudinata.* They have ever attracted attention, and afford rich esults when they become the subject of anatomical investigation. Strange to say, while the Soft-shelled Turtles of the Old World are lmost exclusively confined to those regions south of the twenty-rst isothermal, the distribution of their North American repre-entatives is exactly the opposite.

In the Upper Mississippi Valley, and throughout the Great ake Region, even as high as Athabasca, is found *Aspidonectes pinifer*, Agassiz (*Tryonix spinifer* of Lesson), which, unlike the ajority of Tortoises common to this region, presents a peculiar onformation of the paws entirely unfitting it for terrestrial loco-otion, and only suitable for swimming. Each paw possesses hree toes, all more or less movable, and joined together as far s the nails by broad flexible membranes; and it is by no eans certain that a fourth toe is not common, though but a udimentary tubercle, as several specimens have been seen with his peculiarity.

The observations of the writer were begun some years since nder the pupilage of Professor Sager, State Zoologist of Michigan, nd confined almost exclusively to Michigan and Ontario, where, trange to say, the above-named species is common to all the streams that flow to the south and west, but so rare—if, indeed, present at all—as to be utterly unknown as an inhabitant of the waters flowing eastward. The cause of this is unknown, but is probably connected with the character of the water and supply of food, as the same may be said of the Brook Trout (*Salmo fontinalis*), which is abundant in the north-western streams of Michigan, but wanting in those whose waters mingle with Lake Huron—except those of the opposite Canadian shore.

The female *Aspidonectes* usually exceeds the male in point of size, attaining an extreme length of from twenty-four to twenty-eight, and, in rare instances, thirty inches, with an average length of carapace of fifteen to eighteen; while specimens of the latter are rarely found exceeding one-half the extreme size of the females, averaging usually about fourteen inches. The sternal plastron in both sexes is not ossified across its middle, and the carapace is without marginal pieces. The latter, however, is very much flattened and expanded, but unprovided with scales, covered instead with a soft derma, which has given rise to the common designation of "Soft-shelled Turtle." Nearly one-half the length of the upper shell, and more than one-fourth its breadth, is composed of fibrous membrane of leathery consistency, mistaken for, and erroneously termed, cartilage, by many writers. Olive-brown above, beneath it is of a dirty yellowish white, greatly mottled, streaked and dotted with black. A blunt keel along the median line slopes uniformly to the sides; and the anterior margin is furnished with spines and tubercles, largest and most abundant in the female.

An elongated and protractile neck, and nostrils prolonged into a sort of trunk or proboscis, is likewise characteristic of the species. The jaws are trenchant, distinctly serrated on their edges, presenting the general aspects of bone, though a microscopic section reveals only the angular nucleated cells of horny tissue, while a fold of skin presents the appearance of lips. The tongue is short, triangular and soft, but not fleshy, and exhibits a peculiar surface, on which is arranged, somewhat in rows, a great number of delicate fringes resembling the filiform processes of the gills of the *Menobranchus*.

In common with other species of this genus, the ribs are united by, and invested with the ossification of the sub-dermal and intercostal fibrous membrane; and hence the margins of the ribs may, in general, easily be traced upon the interior of the carapace. But the most marked results of this defective ossification is the entire separation of the eighth pair of ribs from those anterior, they being held in position only by dense fibrous investment. This is entirely different from what we are led to expect; for Cuvier, in remarking upon the carapace of this genus ('Ossemens Fossiles,' tome ix., p. 398), observes that "There are eight pairs of ribs, *united by sutures*, which in these, as well as in the Marine Turtles, are not dilated to their outer end, but of which the dilation extends with the age of the individual."

The relation of the alimentary canal to the size of the reptile, too, varies considerably from the proportions taught. In a specimen two feet in extreme length, the entire length of the digestive apparatus was exactly four feet, divided as follows:—Œsophagus, nine inches; stomach, six; small intestine, twenty-seven; and colon, including the cloaca, six inches only—this absolute and relative length of the tract indicating a purely carnivorous diet on the part of its possessor. Cuvier gives the relative length of the alimentary tract to the body, as observed in the *Emydidæ*, as five to one; and Rymer Jones, in contrasting the carnivorous with the herbivorous *Testudinata*, remarks that the "*Emydidæ* are more carnivorous in their habits, and in the *Trionychidæ* the alimentary canal is shorter—at least the larger intestine, which is not longer than the small." With *Aspidonoctes*, the large and small intestines, as we have seen, vary materially in length; but they are almost continuous with each other, no angle being formed at the junction, and the separation marked only by a slight valvular constriction: the former, too, though possessed of a trifle greater diameter, is much less muscular than the small intestine, and consequently more distensible.

Again, Cuvier remarks that in those genera of the order other than salt-water Turtles, "the œsophagus presents only longitudinal folds and numerous orifices of mucous crypts." But in the species under consideration we find the greater portion of the gullet covered with bifid fringe-like processes; and upon the fauces, the upper portion of the larynx (*rima glottidis*), and the arches of the hyoid bone, presenting both the character and arrangement of those of the tongue, before noted as resembling the gills of the *Menobranchus*, or more properly, perhaps, the internal ciliated respiratory apparatus of the Tadpole.

The stomach is much thicker, and naturally more muscular, than either the œsophagus or intestines, and presents the appearance of an elongated transverse canal doubled upon itself. Neither the mucous membrane of the stomach nor of the intestines is arranged in folds, but both are finely and beautifully reticulated over their entire surfaces. The lower portion of the gullet, however, is longitudinally plicated, apparently from the contraction of its muscular covering.

The heart possesses two fleshy auricles, and, on casual external inspection, when in motion, apparently contains also two ventricles; but on opening it, the deception is readily accounted for by a strong muscular septum that partially divides the common ventricle. Four arterial orifices, each guarded by valves will likewise be noted, three of which communicate with the cavity on the left side of the septum, while the fourth, that of the pulmonary artery, is upon the right. The venæ cavæ pulsate simultaneously with the common ventricle, and alternately with the auricles.

Two flat lobes, connected merely by a pair of narrow transverse bands, constitute the liver. To the right lobe is appended the gall-bladder, a mere cyst, which is not received into a fissure or groove, but lies externally enclosed by a sac, which is apparently a prolification of the peritoneal hepatic membrane. The spleen is a cylindrical organ, its length exceeding by about three times its transverse diameter, and varying little in proportion to the different sizes of adult specimens, averaging upwards of an inch—from an inch and a quarter to an inch and a half—in length by one half to three-fourths of an inch in diameter. The pancreas is closely attached to the duodenum, and in the largest female specimens exceeds four inches in length, being of narrow flattened form: in a large male it was but two and one-eighth inches, and a trifle broader and more rounded in proportion.

The kidneys are composed of numerous lobes closely overlapping each other; the ureters terminate in the cloaca at from a half to three-fourths of an inch from the orifice of the bladder, being attached to the nipple-like processes of the oviduct in the female (precisely as described by Owen as occurring in *Platypus anatinus*), and in the male upon the *vas-deferens*, the latter likewise forming small but markedly distinct papillæ. The bladder presents a uniform oval outline, and is very obviously muscular, much more so than the *Emydidæ* and

Cinosternidæ, but not more so perhaps than that of some of the aged *Chelydridæ.*

The generative organs of both sexes possess many points of interest, and many striking peculiarities of structure. The oviducts of the female are greatly extended, and each possesses a distinct sphincter near its prominent orifice. Moreover, the distal or inferior third is abruptly narrowed into a small duct—the analogue, perhaps, of the Fallopian ducts of higher Vertebrates; but the remainder corresponds in relative position and value to the uteri of of Marsupials and Monotremes. The lining membranes of these organs is remarkably white and smooth, and with the exception of perhaps two or three minute and isolated mucous glands presents neither crypt nor follicle—nothing apparently to provide for the covering of the eggs of the reptile; yet it would seem, in spite of appearances to the contrary, that this mucous lining must nevertheless possess the power of rapidly secreting calcareous material.

The ovaries proper average from three to five inches in length, and appear merely as the thickened edge of the mesenteric membrane with which they are invested, and which suspends them in proper position and connects them with the kidneys and other viscera. They are scarcely more dense than those of the *Ranidæ*, and the ova are produced only in a narrow strip of the outer part of the meso-ovarium.

The male organ is usually represented by comparative anatomists as large, both in structure and in form, and resembling closely what obtains in the *Struthionidæ*, particularly the male *Struthio camelus.* The singular intricacy of the structure, while it presents an analogy to some of the Marsupials, as the *Echidnæ* and Monotremes, in which the same organ is likewise quadrifid, more nearly resembles the double bifurcated organ of the *Crotalidæ* and *Viperinæ*, yet is even more complicated than in these reptiles. This hardly tallies with Professor Owen's supposition that the bifid extremity of the male organ is an adaptive structure corresponding to the bilateral or double uterus of females, and having reference to multiparous reproduction. If such were the case, we should reasonably expect to find the female *Aspidonectes* possessed of a quadruple uterus; whereas, as already shown, it is but a double organ. The cloacal orifice, which is located half an inch or more from the extremity of the somewhat elongated tail, would seem to suggest an explanation of the length of the latter organ, which averages from three to four inches in length in a relaxed condition, and nearly half an inch in diameter. Its posterior extremity is provided with two large, soft, diverging and erectile bulbs, the erectile tissue of which extends through the whole length of the *corpora cavernosa*.

The peritoneal canals, which in other species penetrate nearly to the male organ, in the *Aspidonectes* do not reach one-third the length of it. The testes seem disproportionately large in smaller individuals, those of a reptile scarcely nine inches in length equalling those of a specimen fully fourteen inches over all. They measured one and one half inches in length, by from one-fourth to to one-third of an inch in thickness, having the elongated form of the organs of pennibranchiate reptiles rather than the round one common to the *Testudinatæ*. Both the *epididymis* and the *vas-deferens* are very long and convoluted.

Of the peculiarities of the muscular system, those of the retractors of the neck present the most interesting differences. Cuvier describes the *retrahens capitis et colli* as arising by its longer part from the ribs of the fifth and sixth dorsal vertebræ, within the carapace, and, passing in the interval between the lungs on the sides of the anterior part of the neck, is inserted by means of *fasciculi* to the transverse apophyses of the third, fourth, and fifth cervical vertebræ, the long *fasciculus* passing to the head to be inserted on the basilar process of the occipital bone; the shorter portion, arising from the fourth and fifth dorsal vertebræ beneath the articulation passes for insertion into the side of the sixth cervical. But in the *Aspidonectes* the *retrahens cervicis* is a single muscle on the side of the neck, and at the anterior attachment, but in its posterior insertion becomes a triceps. Attached to the side of the first cervical vertebræ it follows by its side to the thorax, where it divides into three separate portions, which, however, remain side by side in the anterior part of the cavity and between the lungs, there dividing, one part passing back alongside the vertebral column, through the pelvis, to be inserted into the posterior portion of the fourth caudal vertebræ; the other two portions diverge laterally, one being inserted into the intercostal space of the sixth and seventh ribs, and the other into the outer part of the like space of the seventh and eighth. This muscle replaces the *retrahens capitis collique* described by Ludwig Heinrich Bojanus.

The difficulty in preserving specimens of the Soft-shelled Turtle sufficiently long is a great drawback to anatomical investigation. Even arsenite of potassa fails to exert the preservative effect for which it is so justly celebrated in connection with morbid specimens in general. The vascular and nervous systems present many points of interest and novelty, which, however, demand a little more attention than I have yet been able to give, and are well worthy of separate consideration.

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NOTES FROM AN ARCTIC JOURNAL.

By H. W. Feilden, F.G.S., C.M.Z.S.

(Continued from p. 384.)

Our course from the Cary Islands to the northward took us through the channel lying between Hakluyt and Northumberland Islands. There is a large breeding place of Looms on the north-eastern face of Hakluyt Island, and myriads of Little Auks were flying up and down to their nesting haunts in the talus of the cliffs. The breeding places of the sea-fowl along the shores of this region appear to be continuous, and are occupied by incredible numbers of Looms and Little Auks. Dr. Kane, in those pathetic chapters of his charming work,* which relate how he and his worn-out companions escaped from Smith Sound, and traversed Melville Bay in frail open boats during the summer of 1855, tells us how his party subsisted almost entirely on the spoils of these aukeries and loomeries. The official narrative of the 'Polaris' Expedition† records similar experiences. On the 8th June, 1873, the party from the 'Polaris,' retreating south in the track of Dr. Kane, and under very similar circumstances, found Little Auks extremely numerous in their aukeries on Northumberland Island. The narrative relates that on the following day after a heavy south-west wind, which closed the pack on the land, every auk disappeared. It is evident from this that they were not incubating at that date.

A chain of immense icebergs stretched on our port-side from Hakluyt Island to the entrance of Smith Sound. One of them was of remarkable shape: from a square base, and at right angles to one another, arose four pinnacles, which we estimated to be not less than two hundred feet above the water-line. By what means icebergs assume these peculiar shapes does not appear to me satisfactorily explained. It is evident that subaërial destruction can have little or nothing to do with the shaping of these extraordinary monuments, and it is difficult to imagine why subaqueous action should exert its influence so irregularly, as evidenced in the pinnacled bergs of Baffin Bay and Davis Strait.

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* Kane's 'Arctic Explorations,' vol. ii.

† 'Narrative of the Polaris Expedition,' Washington, 1876.

On the 28th July we anchored in Foulke Fiord, on the opposite side of the bay to where Dr. Hayes wintered in 1860-61. Landing near Jensen Point, of Dr. Hayes' chart,* we ascended a valley lying on the north side of the Dodge range of hills. In the valley were many traces of Reindeer, shed antlers and footprints being common, but we were not so fortunate as to see any of the animals themselves. Some of our companions who landed on the south side of Foulke Fiord discovered a herd of Reindeer, and secured one. The valley by which we proceeded inland was in some parts swampy, but supported a fair amount of vegetation. The arctic poppy, *Papaver alpinum*, was in full bloom, and actually made some spots look quite gay with its yellow flowers. I also noticed, for the first time, the beautiful *Cheiranthus pygmæus* growing on rocky slopes, taking the place in these Arctic wilds of our familiar wallflower. The only birds observed inland were a few Snow Buntings in family groups, the old birds of which were putting on their winter plumage. Beside a marshy rill, six Knots, *Tringa canutus*, were seen, and one of them secured. No doubt these latter birds were breeding in the vicinity. I was somewhat astonished at the time to meet with two butterflies (*Argynnis chariclea*), a large bee (*Bombus balteatus*), a crane-fly, *Tipula arctica*, and another fly which was very abundant, standing dead on stones near streams. I could not understand how the last-named resisted being swept away by the force of the winds, until I discovered that each dead fly adhered by its proboscis so firmly to the stone that the head parted from the body when an attempt was made to disengage it. Numerous traces of Eskimo inhabitants were observed during our wanderings inland, especially fox-traps, in one of which I found a fine Blue Fox; so it was evident that the Eskimo had only recently left the neighbourhood.

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* 'The Open Polar Sea,' p. 96.

The valley by which we ascended to the highlands showed evident signs of having once been occupied by a small glacier; moraines and mounds were stretched across it, the trough of the valley being worked down to the gneiss; the softer strata of sandstones and basalts were eroded, except on isolated mounds and knobs. These sandstones varied in colour from brick-red to dull white, split easily, and showed a great deal of ripple-markings; a long and careful search produced no trace of fossil remains. To the northward, in the direction of Cairn Point and Rensselaer Harbour, stretch a series of ice-rounded gneissoid hills, of a general red colour. On the south rises a flat-topped range, called, by Dr. Hayes, Dodge Mountain, after one of his companions. This same range forms the northern escarpment of Foulke Fiord, and a similar formation occurs on its southern shores, notably at Cape Alexander, where the *mer-de-glace* descends to the sea on both of its flanks and isolates it from the mainland. From the station I reached, the inland ice was at least five miles distant, and to the northward a stretch of hills at least ten miles in width lay between it and the coast. At that season this border-land was almost free from snow, and gave one a fair opportunity of examining the surface. At the points visited by me, the evidence was conclusive that at some time or other the greater part of the land, now free from the *mer-de-glace*, had been subjected to the grinding-down process of ice-action; the moraines in the valleys, erratics perched on the slopes of the polished gneiss hills, the destruction of the softer strata in the valleys, all told the same tale. A very suggestive evidence appeared in a well-defined moraine stretching across a valley that debouched on the shore not far from where our ships were anchored. This moraine ran across the valley at an elevation of 300 feet; at the time of our visit an impetuous torrent of melted snow had cut a section fifty feet deep through it, showing that it was composed of gneiss, basalts, and sandstones; the interstices between the blocks were filled with fine sand, and amongst the sand were imbedded multitudes of the shells of *Saxicava rugosa* (many with both valves still connected), *Mya truncata*, and sparingly *Cardium islandicum* and *Tellina calcaria*. This undoubtedly, to my way of thinking, had been formed by the submerged snout of a glacier, and the question naturally arose whether at some former period the *mer-de-glace* had not a greater extension than at present, or whether the marks of ice-action over the surface of the coast region are to be assigned to the period of submergence. At present we appear to be entirely in the dark as to the exact action of an ice-cap. Does the stupendous mass of frozen water which we are led to believe buries the interior of the continent of Greenland to a depth of thousands of feet remain quiescent, like liquid water in a deep lake, or does it move? In both cases the effluents, namely, the glacier and the river, can be seen at work, and their results estimated. Unless we grant to the ice-cap the power of erosion, I am at a loss to account for the physical contour of a large part of the Arctic Regions, and if the roundings of the hills and the scoopings out of the valleys and fiords are due to such a cause, then there must have been a period of as extreme glaciation in the northern regions of our globe, as we are led to believe now exists at the South Pole.

Returning from my long walk late in the evening, I was so fortunate as to fall in with a boat and party, at the shore, on its way to visit the settlement of Etah, which lies some considerable distance up Foulke Fiord. As we pulled up the fiord, the air above was filled with thousands upon thousands of specks, which were Little Auks passing from their breeding-places to the sea. By this date the young ones were all hatched, and when taken out of their nests appeared as balls of black down. Dr. Hayes has given an interesting and graphic account of the aukeries of Foulke Fiord and the mode of capturing the birds by the natives. He writes:—

"It would be impossible to convey an adequate idea of the immense numbers of the Little Auks which swarmed around us. The slope on both sides of the valley rises at an angle of about forty-five degrees to a distance of from three hundred to five hundred feet, where it meets the cliffs, which stand about seven hundred feet higher. These hill-sides are composed of the loose rocks which have been split off from the cliffs by the frost. The birds crawl among these rocks, winding far in through narrow places, and there deposit each a single egg and hatch their young secure from their enemy, the foxes, which prowl round in great numbers, ever watching for a meal. The birds were more noisy than usual, for they had just returned in immense swarms from the sea, where they had been getting their breakfast. Kalutunah carried a small net, made of light strings of seal-skin knitted together very ingeniously. The staff by which it was held was about ten feet long. After clambering over the rough, sharp stones, we arrived at length about half-way up to the base of the cliffs, where Kalutunah crouched behind a rock and invited me to follow his example. I observed that the birds were nearly all in flight, and were, with rare exceptions, the males. The length of the slope on which they were congregated was about a mile, and a constant stream of birds was rushing over it, but a few feet above the stones; and, after making in their rapid flight the whole length of the hill, they returned higher in the air, performing over and over again the complete circuit. Occasionally a few hundreds or thousands of them would drop down, as if following some leader; and in an instant the rocks, for a space of several rods, would swarm all over with them, their black backs and pure white breasts speckling the hill very prettily.

"While I was watching these movements with much interest, my companion was intent only upon business, and warned me to lie lower, as the birds saw me and were flying too high overhead. Having at length got myself stowed away to the satisfaction of my savage companion the sport began. The birds were beginning again to whirl their flight closer to our heads—so close, indeed, did they come that it seemed almost as if I could catch them with my cap. Presently I observed my companion preparing himself as a flock of unusual thickness was approaching; and, in a moment, up went the net; a half-dozen birds flew bang into it, and, stunned with the blow, they could not flutter out before Kalutunah had slipped the staff quickly through his hands and seized the net; with his left hand he now pressed down the birds, while with the right he drew them out, one by one, and, for want of a third hand, he used his teeth to crush their heads. The wings were then locked across each other, to keep them from fluttering away; and, with an air of triumph, the old fellow looked around at me, spat the blood and feathers from his mouth, and went on with the sport, tossing up his net and hauling it in with much rapidity, until he had caught about a hundred birds; when, my curiosity being amply satisfied, we returned to camp and made a hearty meal out of the game which we had bagged in this novel and unsportsmanlike manner."*

Eider Ducks were breeding in considerable numbers on some rocky islets near Reindeer Point, and about fifty were brought on board. A few Kittiwakes and Glaucous Gulls were flying around.

After a pull of a couple of miles up the fiord, we landed at the village of Etah, a spot very familiar to the readers of Dr. Kane's narrative. The settlement consisted of three stone "igloos" and one roofed over with canvas spread on spars. The place was deserted. The village is situated in a sheltered nook overshadowed by gneiss rocks, with a good look-out to the south and west. Traces of recent occupation were visible on all sides; the igloos were filled with large quantities of blubber, which smelt very disagreeably to our fastidious senses. Many articles that must have been brought from the camp of the 'Polaris' people were scattered around, such as a pillow, a sailor's blue cloth jacket enveloping putrid seal-meat, a single canvas boot, pieces of bar-iron, an iron saucepan, an ice-chisel marked "U.S.," part of a volume of one of the early Arctic voyages, a number of the 'Sunday Magazine,' dated September 1st, 1865, and many other relics of civilization. Several arrows were found; one I brought away had the shaft made of deal, tipped with two feathers, and an iron barb neatly let into a brass stem. Many bones and antlers of Reindeer lay around, also bones of the Walrus. Hundreds of the sterna of *Mergulus alle* showed that these birds formed no inconsiderable part of the subsistence of the natives at certain seasons. The stems of *Cassiope tetragona* had been used as fuel, and considerable quantities of this plant were stored away in dry clefts of the rock. A dog-sledge that we found, made entirely of bone most ingeniously fastened together with thongs of hide, was a marvel of strength and elasticity; the runners were made of pieces of walrus-tusk. At various spots along the shore of the fiord are sites of ancient residences; these have fallen in, and are now only noticeable by the extra green of the mounds. Immense quantities of bones are scattered round these spots, with many fragments of bone-implements.

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* 'The Open Polar Sea,' pp. 390—392.

There appears to be a general impression that the tribe of Eskimo inhabiting the belt of coast-line between Melville Bay and the Humboldt Glacier is rapidly dying off, and before long will be extinct. Kane,* referring to these people as he found them in 1854 and 1855, describes them as—

> "A simple-minded people, for whom it seems to be decreed that the year must very soon cease to renew its changes. It pains me when I think of their approaching destiny,—in the region of night and winter, where the earth yields no fruit and the waters are locked,—without the resorts of skill or even the rude materials of art, and walled in from the world by barriers of ice without an outlet. The narrow belt subjected to their nomadic range cannot be less than six hundred miles long, and throughout this extent of country every man knows every man. I have a census, exactly confirmed by three separate informants, which enables me to count by name about one hundred and forty souls, scattered along from Kosoak, the Great River

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* 'Arctic Explorations,' vol. ii., pp. 210, 211.

at the base of a glacier near Cape Melville, to the wind-loved hut of Anoatok."

Dr. Hayes,* writing of the same people as he found them five years later, says that, from information which he obtained through Hans and Kalutunah, he estimated the tribe to number about one hundred souls—a very considerable diminution since Dr. Kane left them in 1855. The official account of the American Expedition under Hall, mentions that between the autumn of 1872 and the 1st May, 1873, one hundred and two Eskimo—men, women and children—visited Polaris House, with as many as one hundred and fifty dogs, the whole population along the coast from Melville Bay to Humboldt Glacier being estimated at one hundred and fifty souls. This is very satisfactory, for, in spite of Kane's gloomy prognostications, we find the tribe, after a lapse of nearly twenty years, exhibiting no sign of diminution.

Considerable interest must always attach to this isolated tribe, existing, under the most adverse circumstances, as the very northern outpost of man. Science and civilization are to a certain extent their debtors; they saved the lives of Kane and his companions; without their assistance Hayes would have been unable to carry on his investigations in Smith Sound; and they aided the party who escaped from the wreck of the 'Polaris' and wintered near Littleton Island. The journal of Hans Hendrik, one of the Greenlanders who accompanied our Expedition, and who resided for five years with the "unchristened natives of the north," records that—

> "In the days of yore their ancestors used to visit Upernivik, for which reason they still speak of 'Southlanders.' Those northern people had for their merchandise walrus-teeth, for which they got wood, whereas the Southlanders had wood to barter with. Their ancestors also possessed 'kayaks.' The men yonder in the north subsist by the pursuit of White Whales along the edge of the ice, using four hunting bladders in connection with one line, but on the big ice only one bladder. They get the Seals which lie near their breathing-holes upon the ice by creeping up to them and harpooning them. They pursue the Walrus by the aid of two hunting lines, both ends of which are furnished with a harpoon, and their spears are headed with a chisel. As soon as the line becomes tightened by the pulling of the stricken animal, they thrust this into the ice to hold. They also catch Seals by having many breathing-holes at once occupied by men. One

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* 'The Open Polar Sea,' p. 386.

man then generally catches a great number, while the others only get a few, as the Seals, when at the point of choking, have recourse to a few holes without leaving them. Bears they kill by spearing them, after having brought them to bay by the dogs. They capture Foxes in traps of four different descriptions. For Hares they use nets made of seal-skin thongs. For birds they also use an implement like a catcher."*

Our stay at Port Foulke having been limited to twenty-four hours, we had just sufficient length of time at our disposal to observe what an interesting locality it would prove for further investigations, and though, like the rest of my companions, most anxious to push on, yet we all regretted that our visit was necessarily so short. It may be as well to point out here that Natural History and physical investigations occupied a secondary place in the programme of the Expedition, its main object, as set forth in the sailing orders, being "to attain the highest northern latitude, and if possible to reach the North Pole;" consequently every other consideration had to be subordinated to this express command. The opportunities of landing during the passage were confined to those few occasions when the ships were embayed in the ice near the shore. When the ice opened and the dredge or trawl might have been lowered with advantage, that was the very time to press forward, and every energy had to be devoted to the furtherance of that end. Sometimes a combination of circumstances stopped our vessels in places where they were surrounded by water; such opportunities were never missed, and though usually on these occasions all were weary, cold and exhausted, yet the extra toil and labour involved in the lowering and hauling up of the dredge were voluntarily and cheerfully undergone. In reviewing the scientific results of an Arctic voyage, the almost insuperable obstacles that beset an inquirer should be realized, and it is only right, for the sake of those who may go to those regions in the future, that the difficulties which must be encountered should not be glossed over by those who have experienced them.

Captain Nares having decided to attempt the passage of Smith Sound by hugging the western or American side of the channel, our vessels crossed over the following morning to Cape Isabella, where despatches were landed and a cairn erected. The formation of that Cape is red and white granite, which at a short distance might very well have been taken for alternating strata of red and yellow sandstones. At the point where Markham and I landed the dip of the granite was to the north. Fog, sleet and a cold wind, with a good deal of swell, made landing a very uncomfortable task. Through the driving mist and sleet a few Fulmars were to be seen whirling like ghosts in the lead-coloured sky above us. The ships were now surrounded by the drifting pack coming down the Sound, and from this date until our arrival in winter-quarters it was a succession of conflicts with the ice, only varied day from day by the greater or less number of risks run.

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* 'Geographical Magazine,' Feb. 1878.

On the morning of July 30th, after battling twenty-four hours fruitlessly with the pack, our ships took refuge in a small harbour near Cape Sabine, lying between Brevoort Island and the mainland. Before getting under the lee of the land a sounding was obtained in 210 fathoms with grey mud. It proved to be richer in Diatomaceæ (notably *Coscinodiscus radiatus*) than in Rhizopoda. Of the latter *Cassidulina*, *Truncatulina* and *Nionina* were the most prominent types.* We remained off and on in the shelter of Payer Harbour for five days. Whenever there appeared the slightest sign of opening in the pack outside, our two ships ran into the ice, and endeavoured to find a lead- or water-way around the prominent headland of Cape Sabine, against which the drifting ice impinged with great force, rearing up huge hummocks on its northern face.

It was very aggravating, at almost the outset of the Expedition, to meet with such unexpected delays. We had been led to hope that an almost continuous water-way would have been found through Smith Sound, and we dreaded greatly being caught in the pack and drifted helplessly to the south, feeling how disappointing such an untoward result would be to people in England. These delays, however, gave me several opportunities of landing and examining the surrounding country. Its appearance was sadly bare and desolate; the land rose abruptly to a height of 1500 or 2000 feet, and was chiefly composed of a red syenite, which does not appear to disintegrate freely, and consequently little or no soil had been formed in likely spots. No valley led into the interior, and a careful search did not produce above twenty flowering plants; a pretty little fern, *Cystopteris fragilis*, was found growing freely as high as 250 feet above sea-level. The summits of the hill-tops that I ascended were strewed over with boulders of foreign rocks, chiefly yellow sandstones; many of these blocks lay at an altitude of 2000 feet.

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* Brady, 'Annals and Mag. Nat. Hist.,' June, 1878, pp. 425—440.

Despite the unattractive appearance of Payer Harbour, traces of Eskimo were found on its shores, in the shape of seven circles of stones that had been employed in fastening down the edges of the skin-tents which are used by that people as summer abodes. In their vicinity we picked up a few lichen-covered bones of animals, including a tooth of *Rangifer tarandus*, bones of a seal, and the jaw of a fox. At another spot we discovered the greater part of a sledge, the runners of which had been composed of wood and bone, and the cross-pieces of Narwhals' tusks, but so ancient that the exposed surfaces were exfoliated, and so brittle that they barely withstood transport to the ship. A harpoon tipped with a piece of ordinary hoop-iron was found at another camping spot, but the freshness of the traces showed that they belonged to a comparatively recent date. At the time we were somewhat puzzled to account for the presence of iron in the spear-head, which pointed to some intercourse with Europeans; but since reading the official account of the 'Polaris' Expedition,* it is quite clear that communication is kept up between the natives on both sides of the straits, and no doubt iron from Port Foulke has thus found its way to the inhabitants of Ellesmere land. Nothing certain is known about these people inhabiting Ellesmere Land and North Lincoln, and they still remain an interesting subject for the researches of Arctic explorers in the future.†

On Brevoort Island there was a breeding-place of *Larus glaucus*, which we visited. The young birds were in much the same state of plumage as those we found on the Cary Islands; they were nesting on ledges not more than twenty feet above the water and quite accessible. During the disturbance made by our intrusion on the breeding-haunt of the Glaucous Gulls, four Ivory Gulls, very likely nesting in the neighbourhood, made their appearance. One of these, a male, was secured; its iris was dark hair-brown, eyelid fleshy, and of a brick-red colour; tip of the bill gamboge-yellow, merging into ashy-grey on the culmen and base of both mandibles; legs and feet black. Their note is very shrill, approaching more to that of the Arctic Tern than to the harsh note of the Glaucous Gull. The stomach of the individual procured was full of red flesh, probably seal-meat. Eider Ducks were nesting numerously on Brevoort Island; three to four were the full complement of eggs; these were all deeply incubated by this date. A pair of Ravens wheeled overhead, and pounced down on the eggs of a duck that had been disturbed from her charge. A few Black Guillemots were fishing in the open pools; these, with a Snow Bunting found dead on the shore, completed the list of birds observed at Payer Harbour.

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* 'Narrative of the Polaris Expedition,' Washington, 1876, p. 451.

† I am indebted to Prof. Dickie, of Aberdeen, for some most interesting sketches of objects of Eskimo handiwork which were discovered by Dr. Philpotts in 1865, when excavating in an old "igloo" on Banks Island, near Cape Hosburgh. They consist of rude models of Eskimo women, Eider Ducks, and other objects carved in ivory, and a stone harpoon-head drilled to receive fastenings. Cape Hosburgh is situated near to the south entrance of Jones Sound. An examination of that channel would, I have no doubt, yield valuable results.

On the 4th August, Cape Sabine was rounded, and making our way to the westward through Buchanan Strait, we coasted for some miles along the north shore of Ellesmere Land, finally anchoring in a small bay, which was named Alexandra Haven. The rocks in that neighbourhood were gneiss, syenite and schists, with garnets. Not far from our anchorage a valley of considerable size debouched on the shore with a fine glacier at its head some three miles inland. A watercourse ran down the valley, issuing from the glacier; at the time of our visit it was a clear rapid brook, but during July, in the height of the thaw, it must be a large torrent, judging from the size of the channel, on the sides of which patches of *Epilobium latifolium* were in bloom, with yellow-blossomed *Vesicaria arctica*. Nowhere in Smith Sound did we find a better supply of grasses than in this valley, which accounted for our picking up numerous cast-horns of Reindeer, whilst the foot-marks of Musk-oxen were common, the long soft wool of these latter animals being observed sticking to the sides of the boulders, under which they had been sheltering themselves. In the pellets ejected by some bird of prey—no doubt the Snowy Owl—I found the bones and skulls of Lemmings, *Myodes torquatus*. Sections of the bank showed that the stream from the glacier had cut through thin strata of sand and mud, which were in parts much crumpled up—evidence that at the time of deposition they had been disturbed by grounding ice, pushed on shore, whilst the numerous shells of *Mya truncata* and *Saxicava rugosa*, scattered through the strata, were plain evidence of their submarine deposition.

Buchanan Strait, or Hayes Sound, was at this period of the year filled with one season's ice, which had separated from the land and was now ready to drift to the eastward into the main channel. It was very interesting to note how many of these ice-rafts were covered with heaps of gravel, *débris*, and angular fragments of stone which had fallen from the cliffs when the floe-ice was in close proximity to the land. Whilst returning through this ice to the eastward we landed for a couple of hours on the north shore of Ellesmere Land. The coast-line, and to a height of seven hundred or eight hundred feet, is a schistose rock thickly studded with garnets; but the tops of the range are capped by a grey unfossiliferous limestone which weathers yellow. Along the shore line are the ruins of many Eskimo settlements; they appeared to be very ancient, and the numerous bones of animals lying around were lichen-covered. The skull of a Musk-ox and many of its bones showed that this animal had been utilized for food by the former inhabitants of the place. We found there a specimen of a gay-coloured butterfly, *Colias Hecla*, flying about, and we noted afterwards the same species ranged three degrees farther north. A single Ptarmigan, *Lagopus rupestris*, was secured whilst our party was on shore. We made our way out of Hayes Sound under steam and sail, a fresh wind blowing from the south-west. Many Black Guillemots and Little Auks were fishing in the lanes of water along which we sailed. We passed near enough to the southern shore of Bache Island to observe that at the water's edge red syenite or gneiss appears; but above it rises a grand mural cliff of limestone, which extends almost unbroken along its eastern shore as far as Victoria Head.

After leaving Hayes Sound and entering Smith Sound once more, our troubles with the ice recommenced, and a couple of days' unceasing battles, ramming and charging the floes, varied on more than one occasion by the imminent prospect of destruction to our ships, brought us close to Cape Victoria, where the ships lay for an hour or so in a pool of water. Captain Markham being despatched on shore to obtain an observation from an elevation, I was allowed to accompany him. It being low-water at the time of our visit, we found some difficulty in getting up the ice-foot, which at that stage of the tide presented a wall of ice some twelve feet above the water.

(To be continued.)

ON THE OCCURRENCE IN IRELAND OF THE LESSER SNOW GOOSE, *ANSER ALBATUS*, CASSIN.

BY THE EDITOR.

IT will be in the recollection of many of the readers of this journal that a few years ago Mr. Howard Saunders directed attention to the capture, in the County Wexford, of two Snow Geese, which having been forwarded to London for sale with other wild-fowl were fortunately rescued by him from oblivion. A third one, not preserved, was shot about the same time (November, 1871) in Wexford Harbour.*

I have now to report the re-appearance of what I believe to be the same species of goose in the County Mayo, and the capture of two examples under somewhat singular circumstances.

I first heard of the occurrence in August last, through my friend Mr. Henry S. Sweetman, whose name has been lately before the public in connection with the useful Calendar which he is preparing of Documents relating to Ireland in the Public Record Office, and a portion of which has been already published in the Master of the Rolls Series. As he was on his way to Ireland when he communicated the information to me, and was to spend some time in the Co. Mayo, in the very neighbourhood where the Snow Geese were procured, I begged that he would make sure that the birds in question were not Bernicles, and send me any particulars which he could collect concerning them. As he was personally acquainted with the gentleman who obtained them, Mr. J. R. Crampton, of Lake View, Belmullet, he found no difficulty in complying with my request, and shortly favoured me with the following note:—

"A flock of seven Snow Geese were seen on marshy ground in Termoncarra, in the Barony of Erris, about the end of October last. One of them was shot, and a second, a gander, trapped. After a time the latter was placed with some tame geese, and soon fraternised with them. He has now (August 26th) got quite tame, and may be seen leading a party of three dozen of his domesticated relatives, who follow him wherever he goes. He is rather smaller and more elegantly shaped than they are. Five or six of the principal feathers in each wing are black; with this exception he is pure white; and on opening his bill a process resembling teeth is very noticeable."

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* See Proc. Zool. Soc., 1872, p. 519.

Prior to the receipt of this note I had written to Mr. Robert Warren, of Moyview, Ballina, in the same county, whose practical knowledge of Ornithology rendered his assistance in the matter most desirable, and, being somewhat doubtful whether the species had been correctly identified, requested his opinion. He had not heard of the occurrence, and was inclined to think that on enquiry the birds would turn out to be Bernicles. Mr. Sweetman's description, however, of the pure white plumage seemed almost conclusive. Mr. Warren promptly instituted enquiries, and on the 31st August was enabled to send me the following letter from Mr. Crampton, dated the previous day:—

"From the description given in Cuvier's 'Natural History,' I think there can be no doubt as to the bird you refer to being the Snow Goose. With the exception of black tips to the wings the bird is snow-white; a little smaller than the common goose, and much more elegant in shape. He is now quite tame, and has assumed the leadership of our domestic flock, taking them long distances away in the mornings and returning to the yard in the evenings with remarkable punctuality."

In answer to enquiry as to the colour of the bill and feet, and the mode in which this bird was captured, Mr. Crampton obligingly replied, on September 2nd, as follows:—

"The goose is rather smaller than our land Bernicle. The legs and feet are the same in colour, but a shade darker and more livid looking than the common goose. The bill is much the same in colour as that of the common goose, perhaps a little brighter, but with a hard black enamel-like edging along the upper part of the lower mandible, and the same to a less degree on the upper one.

"As to the place and mode of capture, there is a large tract of wet reedy marsh between the lake and the sea, and within a few hundred yards of my house, much frequented in winter by ducks, geese, and occasionally swans. In this marsh, in the end of October last, I saw two strange white birds. After a wet stalk, I wounded and secured one. It lived in my garden for six weeks and then died. The day succeeding its capture the second bird was seen flying over the marsh, and it occurred to me to try and trap him, which I accomplished in the following way:—I had a space about six feet in diameter cleared in the centre of some high reeds, and lined with a coil of wire-netting, which was well concealed. In this enclosed space the wounded bird was placed. I had a passage cut from the enclosure through the reeds, narrow at the end near the decoy-bird and very wide at the outside of the clump of reeds. At the narrowest part of the passage I had four rabbit-traps placed. Within two hours the bird returned and was caught. The wounded bird appeared to be a little smaller of the two, but in other respects I could see no difference. I did not save the skin, as it was much damaged before the bird died."

Such are the particulars which have come to hand concerning this very interesting capture. It remains only to decide to which of the species of Snow Geese the birds in question belong, the plumage of all being very similar.

Anser hyperboreus, Cassin, the largest of the three,—and the measurements of which are—wing, seventeen to eighteen inches and a half; tarsus, three to three inches and a quarter; and bill from forehead, two inches and a half,—is too large a bird to answer the description given of size.

Anser Rossii, Baird,* is as much too small, being no larger than a Mallard. Hearne says, in his 'Journal' (p. 442), "The flesh of this bird is delicate; but it is so small that I ate two one night for supper"!

Anser albatus, Cassin, intermediate in size between these two, measures—wing, fifteen inches to fifteen and three-quarters; tarsus, two inches and seven-eighths to three inches; and bill from forehead, two inches to two inches and one-eighth. The birds shot in Wexford in November, 1871, were identified by Mr. Saunders with this species, and from the description given of those now under consideration it seems probable that they also are of the same species.† On this point, however, in the absence of measurements, one cannot speak with positive certainty. It is to be hoped that when the bird now in Mr. Crampton's possession dies, the owner will take immediate steps to have the skin preserved.

It is remarkable that the Snow Geese which visited the coast of Mayo in 1877 arrived about the same time as those which were met with in Wexford in 1871, namely, in October and November.

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* It seems that the name bestowed or suggested by Prof. Baird was not published by him, but was adopted from his MSS. by Cassin, Proc. Philad. Acad., 1861, p. 73.

† The distinction between *Anser hyperboreus* and *A. albatus* is chiefly one of size. Dr. Elliott Coues does not regard them as specifically different, but treats the latter as a smaller race of the former species. See his 'Birds of the North-West,' p. 549.

They would then be on their autumn migration, and in all probability were driven out of their course by the agency of adverse winds. In a great majority of cases the occurrence of American birds in England has been in the autumnal months. The clue to this, as Prof. Baird has remarked, will be found in a study of the laws of the winds of the northern hemisphere, as developed by the late Prof. Henry and Prof. Coffin.*

One or two points in connection with Mr. Crampton's Snow Goose deserve to be noted. The facility with which the bird became domesticated is remarkable, although this is not an isolated instance. Dr. Elliott Coues, in his 'Birds of the North West' (p. 551), quotes an account given by Mr. Ridgway of a Snow Goose, *Anser hyperboreus*, which had voluntarily become semi-domesticated at Mount Carmel, Illinois, and lived with a flock of tame geese for nearly a year. The bird had been crippled in the wing the preceding fall, but the wound, which was merely in the muscles, soon healed, and it escaped by flight. It flew about half a mile, and observing a flock of tame geese upon the grassy commons between the town and the river, alighted among them. It continued to stay with them, going home with the flock regularly every evening to be fed and enclosed in the barn-yard.

Another point to which attention may be directed is the singular form of the bill in this bird. The edges of each mandible have twenty-three indentations, or teeth as it were, on each side—a peculiarity specially noticed in Mr. Crampton's bird by Mr. Sweetman. The inside or concavity of the upper mandible has also seven lateral rows of projecting teeth, and the tongue, which is horny at the extremity, is armed on each side with thirteen long and sharp bony teeth, placed like those of a saw, with their points directed backwards. The design and use of these conspicuous *lamellæ* (common to other geese, but remarkably developed in this one) become evident when we know the bird's food and its manner of procuring it. It feeds, says Dr. Elliott Coues,† upon reeds, grasses, and other herbs, which it forcibly pulls up by the roots, or twitches in two. The shape and singular armature of the bill thus admirably adapt it for seizing and retaining firm hold of yielding plant-stems.

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* See remarks on the occurrence in England of the American Red-breasted Thrush, 'Zoologist,' 1877, p. 16.

† 'Birds of the North-West,' p. 552.

NOTES ON SOME FISH AND CRUSTACEA RECENTLY OBTAINED IN CORNWALL.

By Thomas Cornish.

The following notes were made during a visit to Prussia Cove Marazion, east of Cuddan Point, Cornwall, where I spent the month of August last.

On the 24th of that month, by the kindness of Mr. Hamilton James, of Truro, I received a very excellent sketch of a dolphin, *Delphis delphinus*, the original of which had been shot with a rifle-bullet in the estuary of Truro River a few days before. The animal was eleven feet long, and of a girth of five feet six inches.

Of the common fish, we took Whiting-pollack (*M. pollachius*), Scad, Bream, Black Bream, Basse, Blind (*M. lusca*), Power-cod, Ballan-wrasse (male and female), Blue-striped Wrasse, Rock Gurnard (Streaked Gurnard, French Gurnard or Parson, *Mullus imberbis*), never taken on a hook), Red Mullet (*M. surmuletus*), Homelyn-ray, Burton Skate, Common Cod, Dory, Grey Gurnard, Smooth Hound (Ray-mouthed Dog), Turbot, Allice-shad, Blue Shark, Rock-cook, Grey Mullet, Conger, Ling, Whistler (Three-bearded Rockling), Atherine, Small-eyed Ray (*R. microcellata*, Bordered Ray, Painted Ray), Sole, Variegated Sole, Müller's Top-knot, Angel-fish (Monk), Rough Dab, Plaice, Sand-eel, Gattorugine, Smooth Shanny, the Great Pipe-fish, and (in a pool having no communication whatever with fresh water) a Fresh-water Eel.

Of the rarer fish, I have taken the Boar-fish, and have had brought to me the Sword-fish, of which I have written to you (p. 351); and the occurrence in the bay of another uncaptured Sword-fish—said to be of larger size than the one taken—has been reported to me.

In addition to these, I have had two fish of extreme rarity, both captured in Mount's Bay. The first is the Derbio, sent to me on August 20th by Mr. Mitchell, of the Western Hotel, Penzance. It was accompanied by the smallest mackarel I have ever seen. The dimensions of the Derbio were—Over all seven inches and six-eighths; eye to fork, six inches; depth, two inches and two-eighths; length of head, an inch and five-eighths; lateral line curved high over the pectorals, then descending rapidly and running straight to the tail, strongly carinated as it approached the tail, and apparently, but not really, cross-braced and serrated. This specimen, though smaller than that described by Couch, agrees with his description of the fish in every particular except one: he mentions the existence of several free spines in front of the dorsal; this specimen most certainly had none. Possibly this may be a sexual distinction.

The other rare fish is the "Wreck-fish" (Couch's Polyprion, *P. cernium*, called by Couch the "Stone Basse"), which was caught in Mount's Bay on the 24th August, and kindly sent to me by Mr. A. O. Mitchell, of Chymorvah (the friend who sent me the sword-fish). Its dimensions were as follows:—Over all twenty inches; eye to fork, twelve inches; depth six inches and five-eighths; weight, six pounds.* It will be seen from these measurements that this specimen was small. It agrees with Yarrell's description, and also with Couch's, except that I am certain that at the time I examined it—about eight hours after its capture—it had on its ventrals a first ray, spinous, but with no part of the spine free, and on the anals the three first rays spinous, but with the spines all similarly concealed by the membrane of the fin. Since then the skin of the fish has been dried in the process of preservation, and these rays, owing to the shrinkage of the fin membrane, all now appear as free. Its mouth was a perfect study; it was filled with beds of very small teeth, in, literally, every place on which a fish can carry teeth. They were not only in the jaws but on the vomer, the palatine bones, on the intermaxillaries, on the pharynx, and on the arches of the gills. On these latter, in addition to the small teeth, there were on each of the upper arches a regular row of spinous teeth, or spines, of about three-eighths of an inch long; on the second arch these became stumpy teeth, and on the third little knobs. The scale-rayed processes on the soft-rayed end of the dorsal, and on the ventrals and anals, were very apparent.

I took also one specimen of Yarrell's blenny, the first which I recollect having seen.

In crustaceans (stalk-eyed, I do not know much about the others) I did well,—I have already mentioned to you that I took Wrinkled Swimming Crabs of very small size,—Long-armed Munida, Andrews' Galathea, Long-legged Spider Crab, Common Spider Crab (of small size, but covered with sea-weed and corallines), and Long-horned Porcelain Crab. On this latter I made a curious observation. The first I had was taken in the ordinary way in a "pill" (or pool of water left by the receding tide), but the second was taken in deep water in my trammel, enclosed in a sort of nest made of sea-weed and sand, which had all the appearances of being worked up artificially. I noted of the hindmost pair of legs of this little crab that it never used them, or even displayed them whilst alive. They were kept tucked up under the back of the carapace (or close alongside of it), over the other legs, and were but very rarely moved, and never both together.

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* On September 7th I received another specimen of this fish, within six hours of its capture on a hook and line. The spinous rays on the ventral and anal fins were all free.

I had a second Long-legged Spider Crab from the deep water covered with little bits of sea-weed, not, I think, growing, but stuck on to it in some way. Most of the weed consisted of little fragments of some of the common *Delessariæ.* I took also the Common Crab (*C. pagurus*), the Lobster, the Cray-fish, the Velvet Swimming Crab (the Blue Harry, *P. puber*), and on my last day the rare swimming crab, *Portunus Holsatus,* the Livid Swimmer. The specimen was in excellent condition, and I saved it out of my trammel whole, but some rough handling has since unfortunately crushed in the back part of the carapace. I had also *Xanthus florida* and *rivulosa* (in my opinion varieties of the same crab), and the Common Shore Crab. On the 22nd August we observed from the shore a shoal of some sort of fish passing in the very unusual direction of from east to west. It appeared to be broad and of about a half a mile in length. I afterwards learned from a boat which passed through it that it was a shoal of large-sized jelly-fish, probably *Rhizostoma Cuvieri,* the most common jelly-fish on our coast, and of which I took two or three specimens in the course of the month.

Early in the month I took the Common Cuttle-fish, *Eledone octopedia* of Leach and Gosse, and *Loligo piscatorum* of Rymer Jones. After that I took the Bomb Cuttle, so called, I believe, from the resemblance of its sac to a bomb or mortar. This I consider to be *Sepia officinalis,* and to have by some writers been confounded with *Eledone* and *Loligo,* but it is quite distinct. Both have sepia-bags, and are consequently occasionally nuisances from their habits of "squirting ink," but a clear distinction is that the backbone of the Cuttle-fish (which I regard as *Eledone* and *Loligo*) is horn-like and semitransparent, whilst that of the Bomb Cuttle (which I take to be *Sepia officinalis*), is the white opaque substance known to every one as the backbone of the Cuttle-fish. There are other exterior and clear distinctions to which I need not now refer.

The event of my month at Prussia Cove, however, was the capture of an Octopus, *O. vulgaris*, in my trammel on August 24th. It was brought in alive and placed by my people in a "pill." It was about three feet and a half long over all, and about six pounds weight. I took it out and showed it to some friends, and whilst doing so two or three of its arms (with their 240 suckers each) were twined closely around my right hand and fore arm. I felt nothing more than a strong sucking action, and after about five minutes I put the creature into another and larger "pill," in which it swam about with a most graceful action until it found a hole under a large stone, into which it crept, arms foremost, and, turning round and using its suckers as hands, it lifted or handed out several large stones, one of nearly three pounds weight, and made a sort of nest for itself, and there rested until the coming tide enabled it to escape. This creature has no backbone (none at least perceptible to the touch), and I judge, and am told, that it has no sepia-bag. Under all the rough treatment which it received it never "squirted ink," although it constantly ejected water. Its respiratory tubes were very interesting. There were two on each side, and it could apparently work them at pleasure, but the expiration was always performed by those on one side and the inspiration by those on the other. This was whilst the animal was at rest. Whilst swimming I think all four tubes were at work, and that the force which propelled it, tail foremost through the water, was derived from the gentle injection and forcible (by muscular power) ejection of water through them. About two hours after I had handled this beast I felt a numbness in the little finger of my right hand, as if I had hit my funny-bone. This increased until in about twelve hours my arm was numbed to the shoulder. On the next day it was worse, and I could not use it at all. Since that time (now ten days ago) it has been gradually recovering, and I can now write. I have no pain, but only a sensation of numbness and want of power, my general health not being affected.

Since writing the above I have had brought to me from Prussia Cove a specimen of Pennant's Globe-fish, *Tetraodon stellatus*, found dead on the beach there after a gale of wind. It is remarkable that more than half of the few recorded instances of the occurrence of this fish have happened between the Lizard and Trevose Head.

I may also mention the Nipper Crab, *Polybius Henslowii*, as not uncommon at Prussia Cove, although I obtained none this year.

PROVINCIAL NAMES OF BRITISH ANIMALS

Stewartry of Kircudbright.—

Bats. Always spoken of with the prefix *Blin'*.
Mole. *Moudie* or *Moudie-warp*.
Hedgehog. *Urchin*.
Shrew. *Screw-mouse*.
Badger.[*] *Brock*.
Polecat. *Foumart*.
Weasel. *Game Rat* and *Whitrick*.
Porpoise. *Pellick* (Solway Firth).
Common Hare. *Bettie*.
Lizard and Newt. *Asp* or *Ask*. Supposed to be venomous.
Slow-worm. *Blind-worm*.
Frog. *Paddock*.
Peregrine Falcon. *Game Hawk* and *Hunting Hawk*.
Kestrel. *Keelie*.
Buzzard. *Gled*.
Owls. *Hoolets*.
Dipper. *Water Pyet*.
Missel Thrush. *Feltie*.
Fieldfare. *Storm-cock*.
Song Thrush. *Mavis*.
Ring Ouzel. *Mountain Thrush*.
Hedgesparrow. *Hempie* and *Creepie*.
Redstart. *Red-tail*.
Whitethroat. *Cut-throat*.
Willow Wren. *Yellow Wren*.
Great Tit. *Black-cap*.
Blue Tit. *Ox-e'e* and *Blue-bonnet*.
Long-tailed Tit. *Bell-ringer*.
Tree Pipit. *Tree Lark*.
Meadow Pipit. *Moss-cheeper* and Titlark.
Sky Lark.[†] *Laverock*.
Common Bunting. *Corn Bunting*.
Yellow Bunting. *Yoit* or *Yeorlin*.
Chaffinch. *Shelfa*, *Snabby*, *Briskie*, and *Brichtie*.
Brambling. *Cock-o'-the-North*.
House Sparrow.[‡] *Spyng* and *Sprug*.
Greenfinch. *Green Lintie*.
Goldfinch. *Goldie* and *Goldflinch*.
Linnet. *Whin-lintie*.
Chough. *Red-legged Crow*.
Carrion Crow. *Corbie*.
Hooded Crow. *Hoodie*.
Rook. *Craw*.
Jackdaw. *K'ya*.
Magpie. *Pyet*.
Jay. *Jay-pyet*.
Wren. *Cuttie*.
Cuckoo. *Gowk*.
Swift. *Black Swift*.
Nightjar. *Night-hawk*.
Ring Dove. *Cushie* and *Cushat*.
Partridge. *Paetrick*.
Quail. In the neighbouring county of Wigtonshire, where it occurs occasionally, this bird is called *Wet-my-feet*, in allusion to its cry.

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[*] A year or two ago almost extinct in the Stewartry, except in Glenkens. Colonel Blackett, of Arbigland, however, turned out some in the parish of Kirkbean; and young ones, I am informed, were seen a month or two ago.

[†] Laverocks have almost disappeared from the parish of Traquair, in which I live. This, without doubt, is caused by Starlings, who destroy their eggs. The increase of Starlings during the last twelve or thirteen years has been most marked, and noticed by the most casual observers. When I was a boy the Starlings nested at only three places in the whole parish, but now there is scarcely a chimney, church-steeple, or garden-wall in the county where their nests are not to be found. [What evidence is there that Starlings destroy Larks' eggs? We are acquainted with many localities in which both species abound.—Ed.]

[‡] At Wanlockhead (1200 feet above sea-level), a mining village on the borders of Dumfriesshire, the Sparrow is quite unknown. [See Yarrell's 'British Birds,' 4th edition, vol. ii., p. 94, note.—Ed.]

Lapwing. *Tee-wheet.*

I have also heard this bird named the *Shochan* by shepherds and keepers who were natives of, or had resided in, the Highlands. I believe it is the Gaelic name of the Lapwing.

Oystercatcher. *Sea-pyet.*

Common Heron. *Craigie*, and sometimes *Jenny Heron.*

Craig is an old Scotticism for throat, and probably the bird has been so named on account of its long neck.

Bittern (nearly extinct in this county now). *Bog-drum.*

Common Curlew. *Whaup.*

In country houses when children have been whistling, I have heard their parents order them to "stop their *whaupin.*"

Common Sandpiper. *Kittineedie.*

Snipe. *Heather-bleater.*

Dunlin. *Purre.*

Landrail. *Corn-crake.*

Waterhen. *Stankie.*

In this district a still deep piece of water is called a *stank.*

Coot. *Bald Coot.*

Sheldrake. *Stock-annet.*

Teal. *Jay-teal.*

Cormorants. *Cow'en Elders*, and in Wigtonshire *Mochrum Elders.**

Tern. *Sea Swallows.*

Black-headed Gull. In the eastern parishes of this county this bird is known as *Collochan Gull*, from the name of a loch where it breeds in some thousands.

Common Gull. *Sea Maw* or *Mar.*

Herring Gull. *Cat-gull.*

These gulls are detested by the keepers, and have probably earned their name and character by their cat-like depredations amongst the newly-hatched young birds and eggs on the moors.

—Robert Service (Corberry Hill, Maxwelltown, N. B.).

Yorkshire, West Riding.—As supplementary to my list of provincial names used in this district (p. 331), I may add the following:—

Mole. *Mouldwarp.*

Rat. *Ratton.*

Whinchat. *Hay-chat.*

Stone-loach. *Tommy-loach.*

Miller's-thumb. *Bull-head.*

Lizards and Newts. *Askers.*

Tadpole. *Bull-head.*

Ladybird. *Cow-lady.*

Cockroach. *Black-clock.*

Dragonfly. *Horsetang.*

Doubtless a corruption of "Horse-stinger," from its supposed habit of stinging horses.

Tortoiseshell and Red Admiral Butterflies. *Scotch Nannies.*

Cranefly. *Tom-spinner* and *Daddy Longlegs.*

—G. T. Porritt (Highroyd House, Huddersfield).

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* Colvend (pronounced Cow'en by the natives) is a coast parish much frequented by these birds, and Mochrum is a loch where one of their great breeding-places is situated. Perhaps their present appellation was bestowed on the Cormorants by our Presbyterian forefathers in the days when the Kirk Session held supreme sway in rural places, and might be one way in which the people showed their dislike to its somewhat inquisitorial functions.

Yorkshire, West Riding.—The following local names of birds are in currency in the West Riding of Yorkshire, and have all come under my own personal observation:—

Kestrel.	*Stand-hawk.*
Sparrow-hawk.	*Blue-hawk.*
Missel Thrush.	*Churcock.*
Fieldfare.	*Blue-tail.*
Ring Ouzel.	*Crag Ouzel.*
Hedgesparrow.	*Dunnock.*
Whinchat.	*Grasschat.*
Wheatear.	*Stonechat.*
Sedge Warbler.	*Willow Sparrow.*
Whitethroat.	*Straw-small.*
Wood Wren.	*Haybird.*
Willow Wren.	*Peggy.*
Blue Titmouse.	*Bluecap.*
Ray's Wagtail.	*Seedfore.*
Meadow Pipit.	*Moor-tit.*
Yellowhammer.	*Yoldring.*
Chaffinch.	*Bulspink.*
Goldfinch.	*Goldspink.*
Linnet.	*Red Linnet.*
Lesser Redpoll.	*Chevvy Linnet.*
Twite.	*Grey Linnet.*
Starling.	*Shepster.*
Rook.	*Crow.*
Magpie.	*Pianet.*
Swift.	*Whip; Devil-bird.*
Nightjar.	*Night-hawk.*
Lapwing.	*Tuit.*
Heron.	*Heronseugh.*
Common Sandpiper.	*Sand-snipe.*
Landrail.	*Grass-drake.*

The Wheatear is invariably called "Stonechat." Whenever the nest of the Garden Warbler, Blackcap, Sedge Warbler, or Whitethroat is alluded to, it is designated "Straw-small," in allusion, I suppose, to its flimsy structure. The name "Twite" is frequently bestowed upon the Meadow Pipit. Various local names are applied to the Linnet. Occasionally a male is met with in the breeding-season without the carmine tinge on the breast and forehead, and in a plumage similar to what it bears in winter; these are named "Grey-birds"; sometimes a few are caught at the same season with a yellowish hue on the breast—these are called "Lemon-birds"; so far as I have had the means of ascertaining, they are somewhat larger than the normal size of the red-breasted specimens. Both the Rock and Ring Doves are called "Wild Pigeons."—E. P. P. BUTTERFIELD (Wilsden).

South Hampshire.—

Squirrel.	*Skuggy; Charlie.*
Bat.	*Ranny-mouse.*
Badger.	Sometimes *Brock* or *Bruck*, but generally "Badger."
Miller's-thumb.	*Noggle-head.*
Loach.	*Lie-still.*
Stickleback.	Male, *Firey-lock;* female, *Enemy-chit.*
Sand Lizard.	*Evet.*
Water Newt.	*Water-evet.*
Hobby.	*Van-winged Hawk.*
Kestrel.	*Windhover.*
Hen Harrier.	Male, *Grey Buzzard.*
Red-backed Shrike.	*Pope; Butcher-bird.*
Spotted Flycatcher.	*Wall-bird.*

Missel Thrush. *Storm-cock; Bull-thrush.*
Redstart. *Fire-tail.*
Stonechat and Whinchat. *Furze-hacker.*
Wheatear. *Horse-musher.*
Sedge Warbler. *Channy; Cham-chider.*
Whitethroat. *Nettle-creeper.*
Golden-crested Regulus. *Thumb-bird; Golden-cutty.*
Blue Tit. *Tom-tit; Bee-biter.*
Long-tailed Tit. *Long-tailed Capon; Bottle-tit.*
Pied Wagtail. *Molly Wash-dish.*
Yellow Wagtail. *Yellow Molly.*
Meadow Pipit. *Titlark; Meadow Lark.*
Black-headed Bunting. Male, *Black-cap;* female, *Spear-sparrow.*
Chaffinch. *Chink*; *Chiffey.*
Hawfinch. *Berry-breaker.*
Linnet. *Red Linnet* or *Brown Linnet*, according to the sex or season of the year.
Bullfinch. *Bullie.*
Siskin and Lesser Redpoll. *Aberdavine.*
This name is applied to both species, but more generally to the former.
Hooded Crow. *Grey-back.*
Green Woodpecker. *Yaffingale; Wood-knacker.*
Spotted Woodpecker. *Wood-pie.*
Lesser Spotted Woodpecker. *Little Wood-pie.*
Wryneck *Cookoo's-mate; Snake-bird; Little eten bird; Weet-bird; Barley-bird.*
Wren. *Cutty.*
Nuthatch. *Mud-stopper.*
Swift. *Screecher; Black Martin.*
Nightjar. *Night-hawk; Gnat-hawk.*
Pintail. *Sea-pheasant.*
Pochard. *Poker; Red-headed Curre.*
Tufted Duck. *Black Curre.*
Little Grebe. *Dabchick; Di-dapper.*
Guillemot. *Spratter.**
Cormorant. *Isle-of-Wight Parson.*
Tern. *Sea-swallow.*

—G. B. CORBIN (Ringwood, Hants).

ERRATA.—In my few words on the Worcestershire names of birds, p. 385, *for* Hazeck *read* Hazock, and *for* Spait *read* Chait.—W. H. HEATON.

ORNITHOLOGICAL NOTES FROM DEVON AND CORNWALL.

BY JOHN GATCOMBE.

AT midsummer the nesting operations of the Herring Gulls at Wembury were in full swing, and many eggs and young birds in the down might be seen from the summit of the cliffs. I am sorry to say numbers of nests were robbed, and I fear some of the old birds shot, judging from the fresh cartridge-cases which were lying about, and from the dead birds which were constantly picked up alongshore.

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* This name is often applied to the Red-throated Diver.—ED.

More young Ravens were brought to a Plymouth dealer in live birds. He had lost an old one which had been in his possession for upwards of twenty-five years. It was a famous talker, as an illustration of which I may mention a rather amusing incident which occurred to me not long since. Mr. Rogers, the owner of this Raven and a dealer in various objects of Natural History, had a large Fox Shark or Thrasher, *Squalus vulpes*, brought to him one Saturday night, and as it was to be sent away early on the following Monday morning, to be preserved or to have a cast taken from it, I called on Sunday to ask if I might be allowed to make a sketch of it. My request was readily granted, Mr. Rogers telling me that I could go through the passage into a back court, where I should find the fish lying on the pavement, and there would be no one to disturb me. I accordingly followed his direction, and had just begun operations when I was rather startled by a gruff voice exclaiming "Who are you?" On looking round and seeing no one I proceeded with my sketch, when the voice again demanded, in a more peremptory manner, "Who are you?" I was now beginning to feel a little awkward and annoyed, but on turning quickly round on the third challenge, much to my surprise and amusement, I found it was none other than the old Raven, which I had not before noticed. I am well aware that talking birds have no idea of the meaning of what they say; but, under the circumstances I must confess that the question was, at least, most appropriate and well put. Whilst on this subject, I may perhaps be allowed to mention a little anecdote concerning a Parrot. When attending a crowded sale-room in which an excellent talking Grey Parrot was to be sold, the auctioneer, after having exhausted his vocabulary in extolling the merits of this wonderful bird, added, "Of course, ladies and gentlemen, you cannot expect it to talk in a room so crowded with strangers, but I can give you my word that it is the best talker in the West of England," and after dwelling a long time on the last bid, "Going, going, gone!" down went the hammer with a bang, upon which the bird instantly exclaimed "There now!"

On July 22nd I visited Bovisand, where I met with five Ravens, a whole family, and afterwards heard others. I was pleased to hear from a friend who is well versed in Ornithology that he had then lately seen more than a dozen Cornish Choughs and three Common Buzzards about the cliffs on the coast of Cornwall.

On July 26th, Herring Gulls were still at Wembury, and Curlews were plentiful on the mud-banks of our rivers and estuaries. A friend told me that when fishing on Dartmoor he had found several nests of the Common Sandpiper this summer, one of which was close under the shelter of a furze-bush.

An adult Peregrine Falcon was taken in the neighbourhood of Plymouth. It was a small male, and beautifully marked, with the white extending further down on the breast, and purer than I remember to have observed in any previous specimen. The spots and bars, too, were unusually small. Its stomach was supposed by the birdstuffer to contain some remains of a pheasant.

In August, the first young Herring Gulls were to be seen in the Sound; but many, I am sorry to say, were being daily shot. A few Wheatears appeared on the coast from their inland quarters, and I also heard a few Whimbrels which appeared to have returned from their breeding-haunts rather earlier than usual.

I think the past summer must have been a good season for young Kingfishers, for I saw many on the estuary of the Laira at the entrance of the River Plym. By the middle of the month Cormorants were to be seen daily ascending our rivers and estuaries of a morning to fish, returning at eve in small flocks like wild geese, most of them showing the white belly peculiar to this time of the year.

On August 22nd our harbours were full of both old and young Herring Gulls, and I observed some Black-headed Gulls just returned from their breeding quarters and many Whimbrels. A Manx Shearwater was brought to one of our birdstuffers about this date. Common Redshanks and a few young Sanderlings, with their prettily mottled backs, were to be met with on the coast.

A short time since my attention was called to a case which, I fear, is but too frequent, of young Sparrows and other small birds being dragged out of their nests and being killed by Jackdaws. I recollect having recorded similar instances in 'The Zoologist' a few years ago.

On the 1st September there were several flocks of old Ring Dotterels with very black collars on the mud-banks of the Laira; but, strange to say, I did not detect any young ones amongst them, although I examined them carefully with a powerful telescope.

A young white Spoonbill was recently shot, I believe on the River Tavy, and was to be seen with Mr. S. Hodge, of Ford Street, Tavistock, by whom it had been preserved. Jack Snipes made their appearance on Dartmoor unusually early this autumn. Two were killed on September 17th, and I saw others that were brought in a few days later.

Numbers of Knots and other small waders were observed on the Plymouth Breakwater; and I was glad to see some young Razorbills on the coast in the vicinity of Plymouth, they having become scarce within the last few years. Young Herons seemed to be plentiful this season: they were fishing among the rocks on the open sea-coast, and were in many rather out-of-the-way places. A pair of Buzzards which have nested for years in the woods of Kelly, on the banks of the Tamar, have this year reared a brood of four, and I am glad to say that the owner of the estate never allows his keeper to molest them. The Turtle Dove, a very uncommon species in that part of Devon, has also bred in the same locality.

The keeper at Wembury informs me that the Peregrine still frequents the cliffs of that neighbourhood, and related the following circumstance:—While watching some old and young Pheasants feeding, a Peregrine suddenly appeared to come out of a bush or thicket, seized and carried off a Pheasant before his eyes, and was over a bank and down among the cliffs before he could get the chance of a shot or even put the gun to his shoulder. He then told a somewhat similar story concerning a Sparrowhawk, which ended, however, in a different manner with the hawk. Having seen a Sparrowhawk glide swiftly along and suddenly alight, as he thought, on the other side of a hedge, he cautiously crept up and peeped over, when to his surprise he beheld the hawk on the ground amongst a lot of Pheasants, which he seemed to be eyeing intently, they keeping perfectly still and looking fixedly at him. After waiting some time and seeing no movement he resolved to kill the hawk, even at the expense of a Pheasant, and accordingly secured it, killing one Pheasant at the same shot.

OCCASIONAL NOTES.

VARIETY OF THE WEASEL.—A short time since a curious variety of the common Weasel, *Mustela vulgaris*, was brought by a gamekeeper to one of our animal preservers here. In colour it was a very light buff, altogether different from the usual tint of the animal. Its large size was also remarkable, being eleven inches and a half long, including the tail, which measured two inches and a half. There can be no doubt of its being a Weasel, from the uniform colour of its tail, which in any variety of the Stoat, *M. erminea*, would show some signs of the dark tip.—JOHN GATCOMBE (Lower Durnford Street, Stonehouse, Devon).

BLACK HARE IN IRELAND.—We have received for preservation a variety of the Common Hare, which is perfectly black in colour. It was shot in the neighbourhood of Belturbet; but was unfortunately too much injured for preservation.—WILLIAMS & SON (Dame Street, Dublin).

[In November, 1853, a black Hare was coursed and killed at Enville, the seat of Lord Stamford.—ED.]

ORNITHOLOGICAL NOTES FROM ALDEBURGH, SUFFOLK.—The waders which visit our eastern coast in their southward migration appeared earlier than usual this year. On July 27th two Curlew Sandpipers, or Pigmy Curlews, in summer plumage, which had been shot close to the Haven at Thorpe, were brought to me. Curlews and Whimbrels have been plentiful about the river, and several Wood Sandpipers have frequented the first mere. The "flighting" in the neighbourhood of Aldeburgh has been almost entirely spoiled this year, owing to the cruel (and certainly illegal) pinioning of a large number of young wildfowl, with a view to prevent their straying from the place where they were bred. A fine male Eared Grebe, in perfect dress, was shot in the river near the Martello Tower on the 3rd August; this is the first time it has been obtained here in full plumage. Walking along shore from Dunwich to Aldeburgh, on August 8th, I met with an immense flock of Terns off Sizewell: the Common and Lesser species seemed to be about equal in numbers, and among them I observed a single Black Tern. As they rose from the beach, uttering their peculiar cry in chorus, and wheeled to and fro over the dark blue sea in the bright sunshine, continually crossing and re-crossing one another, they presented a scene as exquisitely pretty as any lover of birds could desire to behold. I was at once reminded of that most interesting sight which the Eastern

Counties can afford to an ornithologist—the great colony of Black-headed Gulls at their breeding-place at Scoulton Mere. The Terns are certainly becoming more numerous on the Suffolk coast. I was told that one day this year more than one hundred eggs were found on the Lighthouse Beach by a single man. They used also to breed at Thorpe; I had an egg given me which was found there this year. A graphic and interesting account of the breeding habits of the Terns is to be found in Mr. N. F. Hele's 'Notes about Aldeburgh,' pp. 167–69.— JULIAN G. TUCK (St. Mary's, Cardiff, South Wales).

EARLY APPEARANCE OF THE JACK SNIPE.—On August 28th I shot a Jack Snipe on Gourock Moor. A friend, who has a moor in Argyleshire, told me that his party had bagged two or three Jack Snipes a few days earlier still. It would thus appear that a few of these small snipe arrive in Scotland as early as the latter end of August. On Dartmoor the 10th September was an average date for flushing the first Jack. On some salt marshes near Barnstaple I have seen Jack Snipes on September 3rd. The keeper on the Gourock Moor told me that he had seen a Jack Snipe all through the summer on the little bog from which I bagged one on the 28th August. On September 2nd, being again on the Gourock Moor, I shot a Ruff. At the beginning of last summer I received a very fine adult male Squacco Heron, which had been killed in North Devon; and about the same time a nondescript goose was sent me, which was shot in a wild state near Barnstaple. This I forwarded to London, not being able to decide what it was; and have since been informed by Mr. Dresser that it is a hybrid between the Muscovy Duck and common farm-yard Grey Goose. It is a very handsome bird.—MURRAY A. MATHEW (Bishop's Lydeard).

[A Jack Snipe was shot in Cardiganshire by Mr. Willis Bund on the 26th August, an unusually early date for the appearance of this little bird.—ED.]

BERNICLE GEESE AT RINGWOOD.— From the beginning of March till near the end of April, a small flock of four or five of these birds was often seen upon various parts of the extensive heaths in this neighbourhood; and although apparently shy of man's approach, yet on one or two occasions they evinced a desire to form an acquaintance with some tame geese at a farm on the borders of the heath, but I believe they never actually joined company with them, though sometimes—especially in the early morning—they would hover near the vicinity of their tame relations, at which the latter, by their manner and clangour, seemed highly indignant. Possibly had they been more agreeable the wild birds would have joined them. At the beginning of April, however, one of the number was picked up, almost dead, near one of the ponds upon the heath. It was in exceedingly poor condition as to flesh, but the plumage was clean and bright; it seemed almost as if the bird had been starved to death. The other birds stayed about the locality several weeks after the death of their companion, but disappeared about the end of April. Is it customary for this species to stay in the south so late in the season, and to frequent such a locality, which, to say the least of it, must be several miles from the sea? The bird that was picked up, although in such a lean condition, weighed between five and six pounds, if I remember correctly.—G. B. Corbin (Ringwood, Hants).

Nesting Habits of the Kestrel and Sparrowhawk.—The observations of Mr. C. Matthew Prior (p. 346) coincide with mine. I found two nests of each of these species this year. The Kestrels laid five eggs each in Magpie's old nests, while the Sparrowhawks built theirs, one in a Scotch fir, the other in a larch, and each nest contained five eggs. The Sparrowhawk, I think, uses the same nest for one year only. On approaching the nests of these birds I could not help being struck with the different behaviour exhibited by the two species under the same circumstances, and I should be glad to know whether the same has been observed before. On striking with a stick the foot of the trees containing the Kestrels' nests, both birds almost instantly quitted them. But, as one might expect from their bold and fearless nature, the Sparrowhawks acted very differently. Although I smartly struck the trees five or six times, both birds remained sitting, and it was only when an expert climber, who accompanied me, had swarmed the trees to a height of about five or six feet from the ground that the birds were induced to leave their nests. This they did with loud cries, while the Kestrels flew away noiselessly. I may mention that the eggs of one of the Sparrowhawks were very different from those of the normal type in size and coloration.—William W. Flemyng (18, Upper Fitzwilliam Street, Dublin).

Great Shearwater, &c., at North Berwick.—It may interest readers of 'The Zoologist' to know that my father, Mr. Robert Chambers, while shooting near North Berwick, on the 27th August last, procured a fine specimen of the Great Shearwater, *Puffinus major*. The bird when first seen was resting upon a piece of wreckage, and appeared to be comparatively tame, allowing the boat to make a near approach. This is the first occurrence of the species, so far as I can discover, in the Forth. In Dr. Turnbull's book on the 'Birds of East Lothian' no mention is made of it whatever. On the same day Mr. Chambers procured several specimens of Richardson's Skua, *Lestris Richardsonii*, a bird which is especially common this year. Several Knots were also obtained, still retaining a considerable portion of the red plumage. Throughout the month of August a great many examples of the Manx Shearwater, *Puffinus anglorum*, had been repeatedly observed in the neighbourhood of the Bass Rock and other localities. Two were shot on the 26th, and several others on the 28th.

This is the first reported occurrence of the species in East Lothian for many years.—C. E. S. **Chambers** (239, High Street, Edinburgh).

[Mr. Robert Gray, in his 'Birds of the West of Scotland,' p. 500, says, "On the eastern shores of Scotland the Fulmar ranks only as a straggling winter visitant. In East Lothian it is occasionally found in December and January. I have seen specimens that were cast up dead on the beach near Dunbar."—Ed.]

Red-backed Shrike in Ireland.—A male specimen of the Red-backed Shrike, *Lanius collurio*, came into my possession on the 12th August last. It was shot on the 10th of that month at a glen near Castlereagh, Co. Down, about three miles from Belfast. It was said to have been one of a party of five or six. The contents of the gizzard were common horse-beetles. I have no record of any Irish-killed specimen before this.—Thomas **Darragh** (Belfast Museum).

[So far as we are aware, this is the first recorded instance of the occurrence of the Red-backed Shrike in Ireland.—Ed.]

The Egg of Owen's Apteryx.—I should be obliged if any of your readers would refer me to recorded or other specimens in Museums or private collections of the egg of the small South Island Apteryx of New Zealand, *Apteryx Owenii.*—J. A. Harvie **Brown** (Dunipace House, Larbert, N. B.)

Wryneck in Perthshire.—On the 6th September I had a specimen of the Wryneck brought to me by a lad who caught it on the bank of the Caledonian Railway near here. It was an adult bird and in good condition, having evidently feasted on ants previous to being taken. I have it preserved and in my collection. This is, so far as I can learn, its first appearance in this county.—Thomas **Marshall** (Stanley, near Perth).

A Hen Swimming.—A hen, the property of Mr. A. Crush, of Mountnessing Hall, Essex, in its anxiety for the safety of a brood of young ducks which it had hatched, has successfully mastered the art of swimming, and may be seen floating about with the ducklings on the pond near the house, apparently quite at home.—F. **Kerry** (Harwich).

Sabine's Gull in Ireland.—A very perfect specimen of this rare gull was shot on the coast of Donegal, on the 19th September, and has been forwarded to us for preservation. It is in an immature stage of plumage—evidently a bird of the year.—**Williams & Son** (Dame Street, Dublin).

Early Arrival of the Snow Bunting.—Two old male Snow Buntings, shot on the 21st September, have been sent to us from Dingle, Co. Kerry; another was seen at Malahide, Co. Dublin, on the 29th.—Id.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

September 4, 1878.—FREDERICK SMITH, Esq., Vice-President, in the chair.

Mr. David Price, of West Street, Horsham, Sussex, was ballotted for and elected an Ordinary Member. Capt. Thomas Broun, of Whangarei Heads, Auckland, New Zealand, was ballotted for and elected a Subscriber.

Mr. D. G. Rutherford exhibited two specimens of an Orthopterous insect, *Palophus Centaurus*, Westw. (originally described from Old Calabar), taken on Mount Camaroons, at an elevation of 6000 feet. The species is nocturnal in its habits, and is remarkable on account of its very perfect resemblance to the twigs of the tree which it frequents.

Mr. Meldola stated that, while on the subject of protective resemblance, he would remark with reference to Mr. Rutherford's exhibition of *Aterica Meleagris*, made at the last meeting, and Mr. Jenner Weir's suggestion that a similar mode of variation might be found to hold good in *Hipparchia Semele*, that having recently obtained a long series of this last butterfly from the sand-hills at Southport, in Lancashire, he had compared the under sides with those of a series from the chalk at Caterham, but no perceptible difference of colour could be observed.

Mr. Weir remarked that he had detected in a British collection some specimens of *H. Semele* which had been taken in Jersey, and that these were darker than specimens from the chalk. With regard to moths, he stated that it was well established that certain species, such as *Gnophos obscurata* and *Eubolia bipunctata*, exhibited a tendency to local variation in colour.

Mr. W. C. Boyd stated that he had observed specimens of *Hepialus lupulinus* from Margate to be whiter than usual.

Mr. F. Smith exhibited a specimen of the so-called "locust-tree" (*Hymenea coubaril*), from British Guiana, forwarded to Dr. Sharp by Mr. Harper. On opening the fruit it was found to contain three living specimens of a weevil (*Cryptorhynchus stigma*, Linn.), a cocoon containing the chrysalis of a moth, together with the remains of one or more such cocoons, and lastly a small parasitic hymenopteron (an ichneumon allied to *Chelonus*). The small puncture by which the eggs of the weevil were probably introduced could be seen in the shell of the nut, but no trace of any other opening. Mr. Smith also stated that Mr. Harper was taking steps to secure information concerning the curious "trap-door bee," the habits of which had formed the subject of an article in 'Household Words' many years ago (vol. ii., p. 353).

Mr. G. C. Champion exhibited a series of *Spercheus emarginatus* taken at West Ham, Essex.

Mr. John Spiller, who was present as a visitor, exhibited some seeds received from Mexico which had the peculiar property of jumping about, in consequence of their enclosing the larvæ of a small moth. They continued to exhibit their remarkable movements for a period of at least three months.

Mr. S. Stevens stated that he had possessed some of the "jumping seeds," and had bred the moths from the enclosed larvæ, which had turned out to be a species of Tortrix, *Carpocapsa saltitans* (see also Trans. Ent. Soc., 2nd series, vol. v., p. 27).

The Secretary exhibited a photograph of *Prodryas Persephone*, Scudder, a fossil butterfly in a wonderfully perfect state of preservation, found in the tertiary formations of Colorado. The photograph had been forwarded to the Society by Mr. Scudder.

Mr. A. H. Swinton communicated a paper "On the Vocal Music and Wing-beating of Insects."

Mr. C. O. Waterhouse read a paper entitled "Notice of a small Collection of Coleoptera from Jamaica, with Descriptions of New Species from the West Indies."

October 2, 1878.—H. W. BATES, Esq., F.L.S., F.Z.S., President, in the chair.

Mr. Thomas Nottidge, of Ashford, Kent, was ballotted for and elected a Member. Mr. J. Lawrence Hamilton, M.R.C.S., of 34, Gloucester Terrace, Hyde Park, was ballotted for and elected a Subscriber.

Mr. Jenner Weir exhibited specimens of *Hipparchia Semele* from the New Forest, Lewes, the Rigi, and Russia, showing a tendency to vary in colour on the under side in accordance with the nature of the soil of the district in which the specimens had been taken.

Mr. M'Lachlan exhibited the eggs and young larvæ of *Ascalaphus longicornis*, found by Mons. E. L. Ragonot in the Forest of Lardy, not far from Paris, apparently the northern limit of distribution of the species. The eggs were arranged, after the manner peculiar in the family, in two rows on a dried grass stem, to the number of forty-six or twenty-three in each row. He had some of the young larvæ still living, but was uncertain as to whether he would be able to rear them.

Mr. M'Lachlan also exhibited, on behalf of Mr. Edwin Birchall, a much-worn example of *Heliothis scutosa*, which had been captured by Mr. W. H. Campbell, of Londonderry, in the north of Co. Donegal, Ireland, on the 19th August last. He alluded to the sporadic habits of this and allied species, and its rarity in the British Islands.

Mr. Rutherford exhibited, and communicated a description of, a new species of Goliath beetle, from Mount Camaroons, allied to *Ceratorrhina Sayi*, Westw. He also exhibited a specimen of a West African butterfly, *Romaleosoma Ruspina*, Hew., nearly a third of the wings of which, on both surfaces, along their outer margin, and beginning a little below the apical angle of the primaries, were entirely destitute of scales, with the exception of the nervures, which were sparsely covered with them. The symmetry of the transparent portion of the naked wings seemed, he thought, to preclude the idea that the butterfly had been partly denuded of its scales, either intentionally or by accident; and he inclined to the conclusion that the appearance it presented was due to some abnormal physiological condition occurring either in the larva or chrysalis.

Mr. G. C. Champion exhibited specimens of *Amara infima*, from Chobham, Surrey, this rare insect not having been recorded since 1857, when Dawson first added it to the list of British Coleoptera.

Mr. W. A. Forbes exhibited a collection of insects from Switzerland, taken at the latter end of June in a valley in the neighbourhood of Chamouni, at an elevation of 5000 or 6000 feet.

Mr. J. Wood-Mason read a note "On a Saltatorial *Mantis*," and exhibited a specimen of the insect, which had been captured on the banks of the Tagus. He also read notes "On the hatching period of *Mantidæ* in Eastern Bengal," and "On the presence of Stridulating Apparatus in certain *Mantidæ*," this being the first discovery of such an organ in that family. The author exhibited, in illustration of the last note, a large *Mantis*, showing the serrated fore margin of the tegmina by means of which the stridulation is effected.

Mr. Wood-Mason also stated that it might interest the members of the Society to hear that in the course of his anatomical work he had discovered a remarkable case of viviparity in the Orthoptera, in a large cockroach belonging to the genus *Panesthia*, the species of which inhabited the tropical forests of Southern Asia and of Australia, where they lived in the rotten wood of fallen trees. The species in question was *P. Javanica*, from the abdominal brood-pouch of the female of which he had extracted young white specimens of 6·5 mm. in length, and these, from their being already provided with legs, antennæ, black eyes, and the full number of already hard-tipped gnathites, as well as from their size, he judged were just on the point of birth when the mother was thrown into the alcohol. He further suggested that the curious and as yet unexplained habit evinced by several European species of *Blattidæ* of carrying their egg-capsules about with them for a week, or even for so long a period as a fortnight, before depositing them, might possibly be explicable as the retention of a vestige of a lost viviparousness.—R. Meldola, *Hon. Sec.*